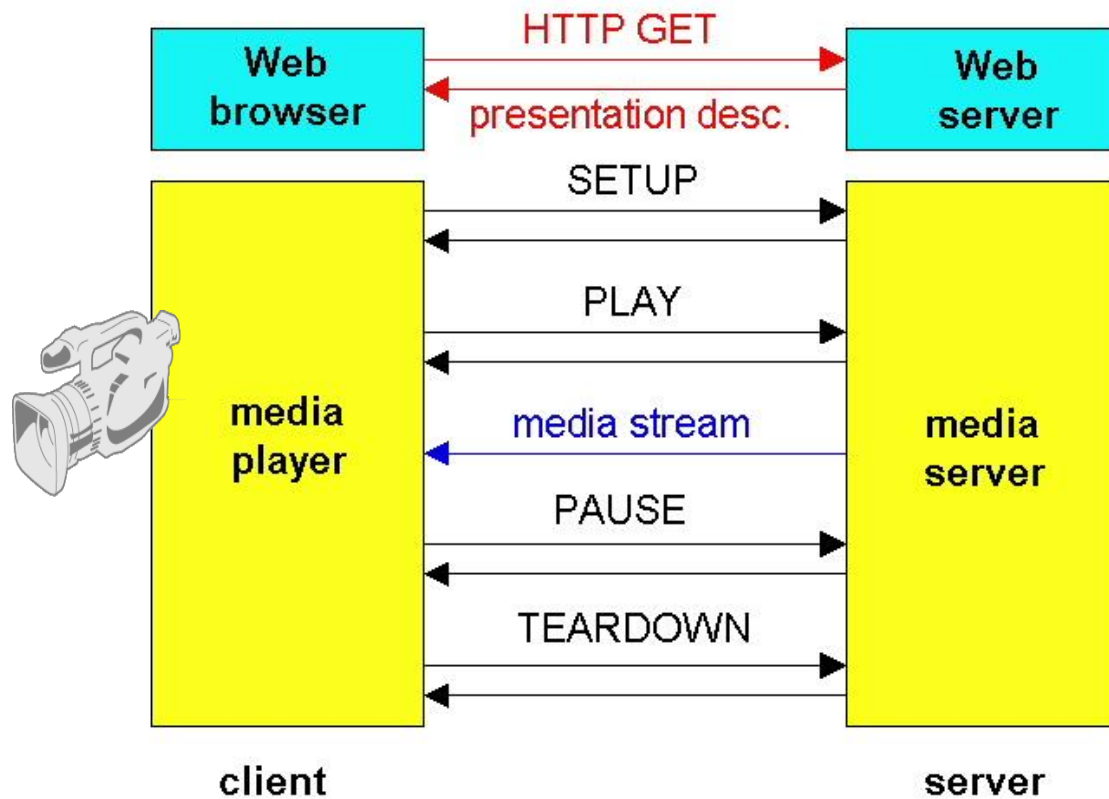


RTSP Operation



- **Clip**
 - Clip is a media file that contains audio, video, or both.
- **Webcast**
 - A webcast uses streaming media technology to take a single content source and distribute it to many simultaneous listeners/viewers by broadcasting over the Internet.
- **Three General Methods for delivering content from a server to a client across a network:**
 - **Unicasting**
 - The server delivers the content to a single client.
 - **Broadcasting**

- The server delivers the content to all clients, regardless whether they want the content or not.

➤ **Multicasting**

- The server delivers the content to a group of receivers who indicate they wish to receive the content.

▪ **Broadcasting**

- Broadcast means a piece of information is sent or transmitted from one point to all other points.
- There is just one sender, but the information is simultaneously sent to all connected receivers.
- In telecommunications, broadcasting means propagation of a flow of information from one source to all potential recipients.

▪ **Broadcasting**

- In networking, a distinction is made between broadcasting and multicasting. Broadcasting sends a message to everyone on the network.
- **Multicasting** sends a message to a select list of recipients.

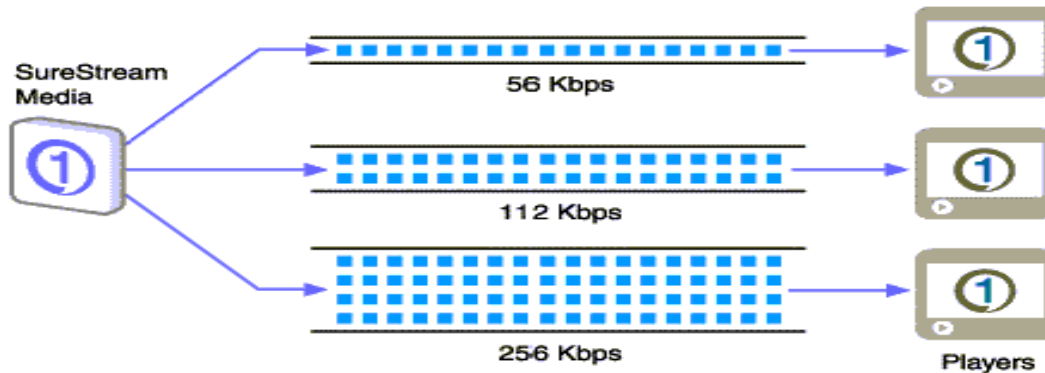
▪ **Bit rate**

- Bit rate is amount of data that can be carried from one point to another in a given time period (usually a second).
- Bit rate is sometimes called data rate or transfer rate or bandwidth.

▪ **Multiple Bit Rate Encoding**

- Combine several streams with different bit rate into a single file

The appropriate bit rate stream is automatically selected

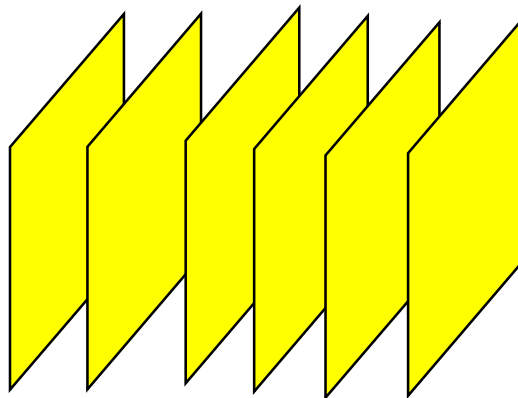


- **Aspect Ratio**

- This is the ratio of width to height that the encoded video will be.
- This information is present in the output video stream and used by the decoder to display the video at the correct aspect ratio.
- The computer display is designed for an aspect ratio of 1.33:1, which means that the width of the display area is only 1.33 times the height, almost square.

- **Frame**

- Frame means one still picture.
- By changing still pictures (frames) quickly, human eye "thinks" that the video is smooth and can't separate pictures from each others and instead sees smooth video.



▪ Frame Rate

- Frame rate is the number of video frames (complete pictures) that will be presented to the viewer each second.
- Human eye can see smooth video with the frame rate more than ~24 fps (frames per second).
- In American TV system, NTSC, the frame rate is approximately 29.97 fps.
- In European PAL system the frame rate is 25fps.

▪ Frame Buffer

- Frame buffer is a special memory to hold the complete digital representation of the frame to be displayed on a computer screen.
- The frame buffer is scanned line by line by the digital-to-analog converter system of the display.

▪ Color depth

- Color depth or bit depth is the number of bits used to represent the color of a single pixel in a bitmapped image or video frame buffer.
- It is known as bits per pixel (bpp).

Higher color depth gives a broader range of distinct colors.

Table 2. Color depth chart

Bit-Depth	Number of Colors
1	2 (monochrome)
2	4 (CGA)
4	16 (EGA)
8	256 (VGA)
16	65,536 (High Color, XGA)
24	16,777,216 (True Color, SVGA)
32	16,777,216 (True Color + Alpha Channel)

▪ Jitter

- In transmission technology, jitter refers to the variation of the delay generated by the transmission equipment. In data communications, jitter refers to the variation over time of the network transit delay.

Multimedia Compression

- Lossless compression
 - Lossy compression
 - Compression/Coding Standards
 - Decompression
 - Codec
- **Compression** is the process of eliminating redundant information to decrease file size. Compression converts frames and pixels to mathematical algorithms that the computer can understand.
 - Decompression converts mathematical algorithms back to frames and pixels for playback.
 - **Two compression methods are:**

➤ **Lossless compression**

- Run-Length coding
- Huffman coding
- Arithmetic coding

➤ **Lossy compression**

- Transform coding

- **Lossless compression** retains all of the data of the original file as it's converted to a smaller file size. In lossless compression the information is recovered without any alteration after the decompression stage. When a lossless file is opened, algorithms restore all compressed information, creating a duplicate of the source file. It generally preferred for creating high-quality or professional applications. Lossless compression is applied where the accuracy of the information is essential, such as in medical imaging where it's important to retain fine detail. Lossless compression is also called bit-preserving compression.
- **Lossy compression** refers to the case where the decompressed information is different from the original uncompressed information. With this kind of compression, some of the source file's information is discarded to conserve space. When the file is decompressed, this information is reconstructed through algorithms. This method results in some loss of sound quality or image detail when compared to the original. This mode is suitable for most continuous media such as sound and motion video as well as for many images.

Codec

- Codec stands for Coder/Decoder or Compression/Decompression. Codec is a piece of software or a driver that is mostly for compression to reduce file size but may also do some formatting. Compression is the primary function of the Codec. With codec, your system recognizes the encoded video/audio format and allows you to play (decode) the audio/video file in a particular format.